8-1901-5516-2
OSHRB -- 3001

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY

Kenneth Peterson, Commissioner,
Department of Labor and Industry,
State of Minnesota,

Complainant,

vs.

Nitrochem Energy Corporation,

Respondent.

FINDINGS_OF_FACT,
CONCLUSIONS_OF_LAW
AND_ORDER

The above-captioned matter came on for hearing before Administrative Law Judge Jon L. Lunde, commencing at 9:00 a.m. on Monday, July 22, 1991 at the Courthouse in Virginia, Minnesota. The hearing, which lasted three days, was held pursuant to a Notice of and Order for Hearing issued by the Executive Secretary of the Minnesota Occupational Safety and Health Review Board on April 23, 1991. The record closed on October 26, 1991, after briefs and a missing exhibit were filed.

John K. Lampe, Special Assistant Attorney General, Suite 200, 520 Lafayette Road, St. Paul, Minnesota 55155, appeared on behalf of Complainant. Patrick J. Roche, Trenti Law Firm, 1000 Lincoln Building, P.O. Box 958, Virginia, Minnesota 55792, appeared on behalf of Respondent.

Notice is hereby given, pursuant to Minn. Stat. Þ 182.664, subd. 5, as amended by Laws of Minnesota 1991, ch. 233, Þ 76, that the Findings of Fact and Order of the Administrative Law Judge may be appealed to the Minnesota Occupational Safety and Health Review Board by the employer, employee, or their authorized representatives or any party, within thirty (30) days following service by mail of said Findings and Order.

STATEMENT OF ISSUES

The issues in this case are whether or not the Respondent failed to furnish each of its employees conditions of employment and a place of employment free from recognized hazards that were causing or likely to cause death or serious injury or harm to its employees in violation of the so-called

general duty clause -- in Minn. Stat. Þ 182.653, subd. 2 (1988). More specifically, the issue is whether the general duty clause was violated due to the Respondent's failure to develop and implement a minimally acceptable standard operating procedure for the disposal of ammonium nitrate based blasting agents in a comprehensive written format readily understandable to all personnel, conduct worker training before employees were permitted to engage in the disposal of rejected blasting agents, and effectively supervise and enforce a minimally acceptable standard operating procedure for the disposal of blasting agents.

Based upon all of the proceedings herein, the Administrative Law Judge makes the following:

FINDINGS OF FACT

1. Respondent is a Canadian corporation doing business in Minnesota and other locations in the United States. It operates a manufacturing plant in Biwabik, Minnesota. Respondent initially acquired an ownership interest in the Biwabik plant from DOW Chemical Company in 1976. In 1982 Respondent acquired complete ownership of the plant. On November 3, 1989, approximately 11 individuals were employed at the plant.

2. At the Biwabik plant the Respondent manufactures a blasting agent commonly known MS-80 which was originally developed and patented by DOW. MS-80 is an ammonium nitrate based slurry which was developed at the Biwabik plant. 1/

3. From 15-18 million pounds of MS-80 are manufactured annually at the Biwabik plant. Product not meeting specifications ("off-spec" or "reject" product) is either recycled or stored until disposal.

4. On November 3, 1989, approximately 225,000 pounds of off-spec MS-80 and other unusable materials were stored ou

5. MS-80 was developed and patented by DOW in the early 1960s. Charles H. Grant, a mining engineer, was actively involved in its development as he had written a research paper on the use of ammonium nitrate as a blasting agent in 1957. Grant was the original manager of the Biwabik plant. The plant was built in 1965 to manufacture ammonium nitrate based blasting agents. In 1976, when DOW sold the plant and the MS-80 patents to Genstar Chemical Company, Grant became President and moved to Genstar's Michigan office. Grant remained an employee of Genstar and its successor, Nitrochem Energy Corp., until 1984. Since that time he has worked as one of the Respondent's consultants. With respect to MS-80, Grant has a considerable degree of expertise.

1/ The letters "MS" are an abbreviation of "Minnesota Station"; the number "80" is the number assigned to a particular formula.

6. MS-80 is significantly more powerful than dynamite and when detonated can generate 750,000 pounds of pressure per square inch. However, MS-80 is significantly more stable than dynamite. It can be shot with a bullet and usually can be burned without detonating. Because it is a slurry, it can be transported in bulk and easily pumped.

7. The formula for MS-80 has changed very little since the 1960s. Hence, production, testing, manufacturing and quality control procedures relating to the product have remained substantially the same for nearly 30 years.

8. Wilho (Bill) Jarvi, a lab technician, was responsible for quality control at the Biwabik plant. He tested the product for flame sensitivity, stability, and inertness, among other things. Although Jarvi was not a trained chemist, he was very familiar with the composition and testing of MS-80 and had worked with it since 1965 when he was initially employed by DOW. Jarvi had a reputation for being exceedingly methodical and thorough in testing the product.

9. On August 1, 1989, the Respondent's insurer conducted an annual inspection of the plant. Based on the inspection, the insurer recommended that within 90 days the Respondent should place the off-spec MS-80 in storage trailers until it could be recycled or destroyed. Ex. V. As a result of the insurer's recommendations, Ronald Fields, the Respondent's plant manager, 2/ decided that he would begin disposing of the off-spec product by burning as soon as the danger of forest fires had passed and he was able to obtain a burning permit from the Minnesota Department of Natural Resources (DNR). Fields decided to burn the product because it could not be recycled. Burning is an acceptable method of disposing of explosives and blasting agents in the explosive manufacturing industry.

10. Fields informed its insurer that he would try to have all the off-spec product disposed of by the first of the year (1990). Ex. T at 1. 3/ On November 2, 1989, Fields telephoned a DNR employee to arrange for a burning permit and he obtained a DNR permit to burn paper and wood that afternoon. Ex. T at 2; Ex. N. The morning after Fields obtained the DNR permit, he informed William Proznek. Ex. 5 at 2. Proznek was the Respondent's plant foreman or "lead man" and was in charge of manufacturing and operations. When Proznek learned that the DNR permit had been obtained, he told Fields that he would start burning, and Proznek assigned Jarvi and Donald Wicken to perform the job.
Proznek had little or no experience burning the product. When Fields informed

Proznek that the DNR permit had been obtained, Fields did not tell Proznek who to assign to the task, the procedures that should be followed, or safety concerns that should be addressed.

2/ Fields had worked at the Biwabik plant almost continously since 1965 when it was owned by DOW. He became the plant manager on July 1, 1989 and had extensive experience in the loading and shooting (propagation) of MS-80.

11. The Respondent did not have any formal training program for the safe disposal of off-spec product and did not have any written procedures, guidelines or checklists relating to that task. The only written procedures available had been developed in the 1960s and related to quality control tests. The tests addressed by those procedures were designed to assure that the product was safely transportable, i.e., sufficiently insensitive to burning, heat and shock.

12. At about 7:00 a.m. on November 3, 1989, Proznek assigned Jarvi and Donald Wicken to begin burning the 220,000 pounds of off-spec product located behind the class A magazine. Jarvi frequently had been involved in burning the product, but nearly all of the burns were quality control tests. He had also occasionally been involved in the disposal of smaller quantities of off-spec product. In 1985 the Respondent had disposed of several thousand pounds of MS-80 at the insistence of the Minnesota Pollution Control Agency. The product disposed of at that time was contained in large drums. Both Wicken and Jarvi were involved in that project. Wicken had worked for the Respondent or its predecessor since January 1966. He was primarily responsible for the operation of a front-end loader or a forklift and for delivering MS-80 to various mining sites, but he was assigned a variety of other duties and had participated in several burning tests with Jarvi.

13. After Proznek assigned Jarvi and Wicken to begin disposing of the off-spec product, Proznek left work to go home and get his lunch pail which he had forgotten to bring to work with him.

14. Before Jarvi and Wicken began work on November 3, they were not told how the job should be performed. They were not told how much off-spec product should be burned at each site, how many burn sites should be set up, the dimensions of each burn site, the relative proportion of MS-80 and fuel that should be used, ignition procedures for each burn, the manner in which the MS-80 should be stacked for burning, the distance the two should remain from

the burn site prior to and after ignition, the procedures that should be followed for observing the course of the burn, the length of time they should stay away from the burn site after ignition, or any other procedural or precautionary steps they were required to follow. Proznek, like Fields, assumed that Wicken and Jarvi knew what they were doing. Ex. O at 7; Ex. T at
14, 15.

15. The off-spec product was to be burned in a relatively flat and slightly elevated 25-acre area located approximately a quarter mile from the plant's main offices. Wicken and Jarvi prepared the first burn site soon after
reporting to work on November 3. From 1,000 to 2,000 pounds of off-spec product was transported to the burn site with a front-end loader Wicken operated. Ex. T at 2. By 7:30 or 7:45 a.m. the first fire had begun; smoke from the fire was visible at the plant office. Jarvi returned to the plant office after the first burn was started and Wicken returned to get another load
of product. After Wicken got the second load, he drove back to the burn area.
It is not known if Jarvi rode with him, but Jarvi also returned to the burn area. Shortly after Wicken was seen returning to the burn area, at approximately 8:15 a.m., a large explosion occurred at the burn area when 200-300 pounds of MS-80 detonated. Wicken was killed immediately and Jarvi was
fatally injured by the explosion.

16. When Fields heard the explosion he went immediately to the burn area.
He found Jarvi on his back approximately 80 feet southeasterly of the rear of
the front-end loader. Ex. A-3. Jarvi's face was covered with blood. Ex. T at
3. His hard hat and his glasses were found near him. Fields returned to his truck and radioed for an ambulance. Then he went over to the loader where he found Wicken's body. Fields attempted to open the door but it was jammed and while trying to open a different door the l

17. When Fields arrived, the 20-ton Case front-end loader was facing and
abutting a crater caused by the explosion. The crater was approximately 16 feet long, 14 feet wide, and 1-1/2 feet deep. Ex. A-3. The loader sustained extensive damage as a result of the explosion and debris consisting of partially burned materials, including wood, ammonium nitrate, and packaging materials, was scattered approximately 360 feet in all directions from the crater. The loader's empty bucket was facing downward in a dumping position when Fields arrived. Ex. A-4 at 6-7. The left side of the bucket was directly
above the edge of the crater about 15" above ground level. Ex. A-4, at 2, Photo 4.

18. A pickup truck that Jarvi had been driving was located about 125 feet
northeasterly of the front of the loader. The pickup was also damaged. The roof of the pickup's topper was rippled and glass on the topper and windows of
the pickup had been blown out or shattered as a result of the explosion. Ex.

A-4 at 33, Photo 65. The blast was strong enough to knock off one of the hubcaps on the pickup and accumulated rust from its undercarriage. Ex. A-4, pp. 31-32.

19. Wayne H. Page is a senior safety investigator for the Occupational Safety and Health (OSH) Division of the Minnesota Department of Labor (Department). He has been employed as a safety investigator since 1973. On the morning of November 3, 1989, Page was engaged in an OSH inspection at a different explosives manufacturer near Biwabik, Minnesota. During that inspection he heard the explosion that occurred at the Respondent's burn site.
Page went immediately to the Respondent's workplace to investigate.

20. When Page arrived at the Respondent's workplace he showed his credentials to Phil Kinsman, one of the Respondent's consultants. Kinsman had
been the plant manager prior to July 1, 1989, when Fields assumed that position. Page informed Kinsman and Fields of the purpose for his presence but
did not conduct an opening conference until the following Tuesday because Fields was preoccupied with the explosion and too upset by the death which had
occurred. On or about December 2, 1989, Page and another OSH investigator, Larry Thompson, conducted a closing conference with Fields. At that time Page
informed Fields that he intended to recommend the issuance of a citation for a
general duty clause violation. Fields was cooperative and pleasant during the
opening and closing conferences Page conducted, but told Page that a citation was inappropriate. Fields agreed to immediately stop disposing of off-spec material until a comprehensive disposal plan was adopted.

21. On December 18, 1989, the Complainant issued a Citation and Notification of Penalty charging the Respondent with a serious violation of Minn. Stat. Þ 182.653, subd. 2 (1988), and proposing an adjusted penalty of $10,000. In the initial Citation the Respondent was charged with a general duty clause violation due to its failure to develop and implement a minimally acceptable standard operating procedure for the burning disposal of reject ammonium nitrate based blasting agents, in a comprehensive written format, readily understandable to all personnel, and conduct worker training before any
worker was permitted to engage in the burning of reject blasting agents.

22. The Complaint reiterated the charges in the original Citation. Subsequently, Complainant issued its First Amended Complaint which amended the
Citation to also charge the Respondent with a failure to effectively supervise
and enforce a minimally acceptable operating procedure for the burning disposal
of reject ammonium nitrate based blasting agents. No change in the penalty was
proposed and the Respondent has stipulated that if a serious violation occurred
the $10,000 penalty proposed was appropriately calculated.

23. The most common method of disposing of explosives and blasting agents is to burn them. One procedure is as follows: Afte

24. When large quantities of blasting agents must be burned, separate burn piles are commonly built. Where multiple burn sites are used, they must be separated by sufficient distances so that an explosion at one site will not propagate to another. Multiple burn sites may be ignited simultaneously or serially, but it is generally unsafe to set up a second pile in the area of an ongoing burn at another site. The record does not indicate the number of times the Respondent's employees were required to conduct multiple burns to dispose of reject MS-80 or accumulated laboratory samples.

25. The Respondent had no oral or written procedures regarding the construction of multiple burn sites. On several occasions, however, multiple burns were required. When they were necessary the second burn site was sometimes set up in a circle around the original fire. Ex. O. On other occasions, entirely separate burn sites may have been used, but the record does not contain any evidence supporting a finding to that effect.

26. The burning disposal of off-spec MS-80 involves five separate stages using the procedure in Finding 23. The first stage involves the placement of the product on top of wood and other combustibles soaked with fuel oil and ignition of the combustibles. During stage two the wood and other combustibles have begun burning and the MS-80 begins to melt. During stage three the fire intensifies and the aluminum in MS-80 begins to melt and run together, falling to the bottom of the fire. In stage four the wood and other combustibles are almost completely burned. At this stage melted aluminum is falling to the bottom of the fire and some of the aluminum is reacting with ammonium nitrate. During this process, the fire produces an exceedingly bright white flame. During this stage (stage four), the MS-80, having lost its water content, is resensitized and a danger of explosion exists. In stage five the violent chemical reactions have stopped, the white flame no longer exists, and a porous crust of matter forms over the top of the pile. Inside the pile, chemical reactions involving the oxidation of aluminum are still taking place. If the pile is disturbed at this point by an outside force, an explosion may occur. See Illustrations 1-5.

27. Stage four is a critical stage of the burn because the product is extremely sensitive at that point and can explode. Due to the enhanced sensitivity of MS-80 at this point, the product cannot safely be stacked too high on the burn pile. If it is, too much heat may be retained in the core of the fire and an explosion can occur from the sheer weight of the product. During stage five the risk of an explosion is reduced, provided the pile is not disturbed from an outside force. Hence, it is critical that employees remain

at a safe distance from the burn pile during stage four and do not disturb the
burn pile during stage five.

28. If a burn pile explodes, workers are exposed to two hazards: blast pressure and flying debris, including projectiles. Blast pressure rapidly decreases with distance, but it would have been unsafe for Jarvi or Wicken to be within 300 feet of the burn pile they constructed unless they were behind a
safety barricade. The explosion that occurred on November 3 would have been powerful enough to propel Jarvi's body from the rear of the front-end loader to
the point where his body was found, some 80 feet distant.

29. It takes approximately 15-45 minutes for a fire to reach stage four and approximately 24 hours must elapse before the burn pile can be disturbed.

30. During the burning disposal of MS-80, a safe distance will vary with
the amount of product being burned, the explosive power of the product, the terrain, and weather conditions. The Respondent did not have any oral or written guidelines employees could use to determine a safe distance. However,
the explosives manufacturing industry has long had a table of safe distances which v

31. The Respondent did not have any verbal or written procedures governing the safe distance employees should remain from fires or the duration
employees should abide by the safe distance requirements.

32. The Respondent occasionally obtained IME brochures and also received
a monthly safety sheet which pertained to a wide variety of safety matters including family safety, recreational safety and safety at the home. At least
every three weeks the Respondent had some form of safety discussion on the job
and some safety training was given to employees. For example, employees were given cardiopulmonary resuscitation courses, courses on the proper use of forklifts, defensive driving courses, and training for the certification of employees who went on mining company property to deliver product. However, the
Respondent never trained its employees in the safe and proper methods of burning large quantities of MS-80 or addressed that topic at safety meetings.

33. The Respondent received information from IME regarding accidents occurring in the industry. These accidents were sometimes discussed at coffee
breaks. Several weeks before the explosion on November 3 the Respondents received notice of an explosion that occurred at another explosives manufacturer's premises. The explosion occurred while the manufacturer was disposing of ANFO, which is a blasting agent composed of ammonium nitrate and fuel oil. Several employees were seriously injured when some ANFO exploded

while being burned. The employees had been standing alongside the burning pit when the explosion occurred.

34. Although it is a recognized hazard to disturb a burning pile after it has reached stage five, and for a period of approximately 24 hours thereafter, this hazard was never communicated to the Respondent's employees and no verbal and written procedures required employees to refrain from disturbing a burn pile.

35. It is a recognized hazard in the explosives manufacturing industry to have too thick a layer of MS-80 on a burn pile. However, the Respondent had no verbal or written procedures regarding the permissible depth of MS-80 on a burn pile and never provided any training to employees on that hazard.

36. The Respondent's supervisory personnel at the Biwabik plant knew that a danger of explosion existed if too much MS-80 was placed on a burn pile. They also knew that during stage four of the burning process, a danger of explosion existed when the MS-80 was resensitized. They also knew that a burn pile after reaching stage five could not be disturbed for approximately 24 hours without creating a danger of an explosion. Nonetheless, it had no verbal or written procedures addressing these hazards and did not train employees regarding them.

37. Both Jarvi and Wicken were not at a safe distance from the burn pile when it exploded on November 3, 1989, and it was unsafe for Wicken to dump more MS-80 on or adjacent to the burn pile when he did.

Based on the foregoing Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS

1. The Administrative Law Judge has jurisdiction herein under Minn. Stat. ÞÞ 182.661, subd. 3, 182.664 and 14.50 (1989).

2. The Occupational Safety and Health Review Board gave proper notice of the hearing to the Respondent and the Complainant and the Board have fulfilled all relevant substantive and procedural requirements of law and rule.

3. The Respondent is an employer as defined in Minn. Stat. Þ 182.651, subd. 7.

4. The Complainant has the burden of proof to establish by a

preponderance of the evidence the occupational safety and health violation charged and the reasonableness of the penalty proposed.

5. The Complainant established by a preponderance of the evidence that the Respondent violated Minn. Stat. Þ 182.653, subd. 2 on November 3, 1989, by failing to furnish each of its employees

6. The violation was a "serious violation" for purposes of Minn. Stat. Þ 182.651, subd. 12.

7. The penalty proposed for the violation was properly calculated as the Respondent stipulated.

8. The Complainant failed to establish by a preponderance of the evidence that the Respondent failed to effectively enforce its safety standards for the burning disposal of off-spec ammonium nitrate based blasting agents because it had no verbal or written procedures to enforce at the time of the accident.

9. The Respondent violated Minn. Stat. Þ 182.653, subd. 2 by failing to train its employees in the safety procedures necessary to safely dispose of off-spec ammonium nitrate based blasting agents, to have any written procedures governing that task or to properly supervise the task on November 3, 1989.

10. Employee training and the adoption of verbal or written procedures for the safe disposal by burning of off-spec ammonium nitrate blasting agents was feasible and would likely have avoided the deaths that occurred on November 3, 1989.

11. The Respondent failed to establish that the explosion resulted from unpreventable employee misconduct or its employees' failure to follow company policies or procedures.

Based on the foregoing Conclusions, the Administrative Law Judge makes the following:

ORDER

IT IS HEREBY ORDERED:

(1) That Citation No. 1, Item 1, as amended in the Complainant's First Amended Complaint is AFFIRMED.

(2) That the appropriate penalty for the Respondent's violation of Citation No. 1, Item 1, as amended, is $10,000.

(3) The Respondent shall forthwith pay to the Minnesota Department of Labor and Industry the sum of $10,000.

Dated this __7th__ day of November, 1991.

s/Jon_L._Lunde_____
JON L. LUNDE
Administrative Law Judge

Reported: Tape Recorded (12 Tapes).

MEMORANDUM

The Respondent is charged with a violation of Minn. Stat. Þ 182.653, subd. 2 (1988) which is commonly referred to as the "general duty clause." The statute, which is based on Þ 5(a)(1) of the federal Occupational Safety and Health Act, states:

> Each employer shall furnish to each of its employees conditions of employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious injury or harm to its employees.

Because the cited statute is based on a comparable federal statute, federal precedents regarding general duty clause violations should be consulted.

To establish a violation of the general duty clause, the Complainant must establish, by a preponderance of the evidence, the following elements:

1. That the employer failed to render its workplace free of a hazard;
2. The hazard was recognized by the employer or the employer's industry;
3. The hazard was causing or likely to cause death or serious physical harm; and
4. Feasible and effective steps were available and should have been taken to eliminate the hazard.

National_Realty_&_Construction_Co._v._OSHRC, 489 F.2d 1257, 1265-1267 (D.C. Cir. 1973) 1973-1974 OSHD ß 17,018. These elements and related considerations are discussed separately below.

I.

There is no question that Respondent provided employment and a place of employment to Jarvi and Wicken. The issue is whether their place of employment (i.e., the Biwabik plant premises) were free of safety hazards. For purposes of the general duty clause, all preventable conditions and practices may constitute a "hazard." See, e.g., Bomac_Drilling, 1981 OSHD

ß 25,363 (1981). Haza

The record shows that there are a multitude of hazards involved in the burning disposal of blasting agents like MS-80. In its brief the Respondent conceded that the hazards existed. One hazard was, as Complainant argued, the deceased employees' failure to remain a safe distance from a burn pile while the danger of explosion still existed. Another hazard involved disturbance of the burn pile before it had cooled. Although Complainant alleged that too much MS-80 had been placed on the burn pile, it failed to establish that the layer of MS-80 on the fire was too thick.

The Respondent failed to make its plant free of the explosion hazards just mentioned. Although the obligation to make its workplace free of explosion hazards does not impose strict liability on an employer, it does require an employer to eliminate recognized hazards. Hence, employers must provide adequate training, instruction and supervision to eliminate preventable hazards. See, e.g., K_Mart, 1982 OSHD ß 26,333 (1982); Young_Sales_Corp., 1977-78 OSHD ß 21,883 (1977). See generally, M. Rothstein, Occupational_Safety and_Health_Law, Þ 146 (3d ed. 1990). In this case, as is discussed in more detail below, the Respondent provided no meaningful instructions, training or supervision to eliminate the hazards associated with the burning of MS-80.

II.

The two primary hazards in this case involve the deceased employees' failure to maintain a safe distance from the burn site and the employees' disturbance of the first burn site before it had cooled. Both of these were recognized hazards. "Recognized hazards" include hazards known in the employer's industry or to the employer. Industry recognition is determined by the "common knowledge of safety experts who are familiar with the circumstances of the industry or the activity in question." National_Realty, supra, 489 F.2d at 1265 n. 32. Employer recognition is established by showing that the employer knew a condition was hazardous. Brennan_v._OSHRC_(Vy_Lactos Laboratories_Inc.), 494 F.2d 460 (8th Cir. 1974).

The record shows that the employer knew that a variety of practices relating to the burning and disposal of MS-80 were hazardous. The practices included the failure to maintain a safe distance from a burn site while the danger of an explosion existed; disturbing a burn site before it had cooled for approximately 24 hours; piling MS-80 at a unsafe depth causing the retention of heat and increasing the likelihood of explosion.

The failure to maintain a safe distance from a fire was specifically known to the Respondent. Several weeks prior to November 3, Kinsman discussed an explosion that occurred when employees of another manufacturing plant were disposing of ANFO by burning. While the employees of that manufacturer were

watching the fire, an explosion occurred seriously injuring several of them. Kinsman's knowledge of this accident establishes that the employer knew that the failure to maintain a safe distance from a burning fire exposed the Respondent's employees to a potential injury. Atlantic_Sugar_Association, 1976-77 OSHD ß 20,821 (1976). The Respondent's industry also recognized that the failure to maintain a safe distance from a fire created a risk of injury. IME had adopted a table of distances that members of the explosive manufacturing industry should follow. Furthermore, there is ample testimony in the record by employees of the Respondent as well as Mr. Larry McCuen, an expert in the destruction of explosives employed by the Bureau of Alcohol, Tobacco and Firearms (BATF) to establish industry recognition of the hazards and actual knowledge of those hazards by Respondent. Nearly all the witnesses testified that a safe distance must be maintained from a burning fire and that a burn pile cannot be disturbed for at least 24 hours due to the risk of explosion.

III.

The third element of the Complainant' death or serious injury. The Complainant is only required to show that if an accident occurred it would likely cause death or serious injury. The Complainant is not required to show that an accident was likely to occur. The Duriron_Co.,_Inc., 1983-1984 OSHD ß 26,527 (Rev. Com. 1983), affd. 750 F.2d 28 (6th Cir. 1984); Kelly_Springfield_Tire_Co.,_Inc._v._Donovan, 729 F.2d 317 (5th Cir. 1984). There is no doubt that an employee disturbing a burn pile or an employee failing to maintain a safe distance from a burn pile would be exposed to a risk of death or serious injury. MS-80 is an extremely powerful blasting agent which clearly posed a serious threat to the Respondent's employees' safety if proper safety precautions were not followed and an explosion occurred.

IV.

In order to establish a violation of the general duty clause the Complainant must show that the employer could have used "feasible corrective measures" to prevent the hazardous condition. The mere fact that the employees engaged in hazardous conduct, even though their actions resulted in injury or death, is not sufficient evidence of a violation.

In this case, the Complainant clearly established that the hazards associated with the burning disposal of MS-80 could have been eliminated if it had developed and implemented written operating procedures for the task which were understandable to its employees, given minimal training to its employees before they were required to engage in the disposal of MS-80 by burning, or effectively supervised burning operations. The adoption and implementation of

standard operating procedures for the burning disposal of MS-80 as well as worker training and minimal supervision were all feasible steps the Respondent could have taken. IME itself has adopted detailed procedures for the task. BATF has also adopted step-by-step procedures and checklists for the disposal of explosives and blasting agents. Clearly these steps were feasible. Moreover, the Administrative Law Judge is persuaded that the adoption and implementation of standard operating procedures, worker training, and minimal supervision would have been practical and useful precautions. In fact, McCune persuasively testified that written procedures, checklists and worker training are indispensable. Even trained employees become complacent and tend to take hazardous shortcuts.

The Respondent argued that there is no sufficient evidence that a written policy rather than a verbal policy would have been more effective. The Administrative Law Judge is not persuaded by that argument. First, there is no persuasive evidence in the record that the Respondent had an oral or verbal policy governing the burning disposal of MS-80 which had been communicated to its employees. Furthermore, there is no evidence that any of the employees had ever been trained in the proper disposal of MS-80 by burning or that the Respondent had any uniform procedures for performing that task. In addition, there is no evidence that the Respondent had effectively supervised the task using a person who had been properly trained and who was familiar with safety procedures. The Respondent's witnesses testified that Jarvi had a great deal of experience and knew the proper procedures for the burning disposal of MS-80. That testimony was not persuasive. Fields made inconsistent statements regarding Jarvi's expertise in the burning disposal of MS-80 and the Respondent's witnesses generally overstated his qualifications and his responsibilities for safety. If Jarvi had the "expertise" alleged, it would not have been necessary for him to consult "burn test" procedures, as they alleged he did, in order to prepare for the burn that occurred on November 3, 1989. The Administrative Law Judge is not persuaded that Jarvi or Wicken had any idea what a "safe distance" was, the proper procedure for conducting single or multiple burns of MS-80, or the risks associated with disturbing

It is unnecessary to decide whether the Respondent should have adopted a comprehensive written safety procedure. Even if a comprehensive written procedure was not required, because there were no verbal standard operating procedures the Respondent should have trained its employees in proper disposal techniques to avoid the hazards that led to the death of its employees. However, Respondent did not have any semblance of a safety program, safety training or supervision to address the risks its employees were exposed to when burning off-spec MS-80.

The Respondent's witnesses suggested that the quality control burning tests constituted the Respondent's written procedures for the large scale disposal of MS-80. That testimony was not persuasive. The procedures followed

in those quality control tests, as Grant admitted, were hardly more than experiments. Although the burning tests were also used to assure that the Respondent's product was sufficiently insensitive to qualify for blasting agent status, they were not developed or identified as procedures that should be followed for the large scale disposal of off-spec product did not address distances, safe procedures, or the risks involved in disturbing a burning pile.

Suggestions to the contrary are grossly overstated and wholly unpersuasive. Therefore, based upon all the evidence, it is concluded that the Complainant has persuasively established the violation charged.

V.

By way of defense to the general duty violation charge, the Respondent argued that the explosion on its premises resulted from unpreventable employee misconduct. Respondent suggested that Wicken's actions were "singular and ideosyncratic." The crucial question in deciding whether a violation was the result of unpreventable employee misconduct is whether the employer could have taken steps to prevent the hazard. In National_Realty, supra, the court said that hazardous conduct is not preventable if it is so "ideosyncratic and implausible in motive or means that concientious experts, familiar with the industry, would not take it into account in prescribing a safety program." The Respondent has the burden of proof to establish that its employees' actions on the day of the explosion resulted from unpreventable employee misconduct. To meet its burden, the employer must prove that it has established rules to prevent the hazard from occurring, adequately communicated its rules to employees, taken steps to discover violations, and enforced the rules when known violations have occurred. See, e.g., Cerro_Metal Products_Division,_Marmon_Group,_Inc., 1986-1987 OSHD ß 27,579 (Rev. Com. 1986). It utterly failed to meet that burden. It simply had no work rules addressing the hazards which existed. The lack of training is evinced by the inconsistent opinions of the Respondent's employees and former employees regarding safe distances from burn piles, the duration those distances should be observed, and other matters. Although Jarvi and Wicken had experience burning MS-80, they had no experience doing so safely.

Moreover, it is not implausible or ideosyncratic for Wicken to have dumped more off-spec product directly on or adjacent to the first burn site. It may have seemed logical to him to do that given the lack of safety training written instructions or supervision he received. Furthermore, there is evidence that the same or similar procedures had been followed in the past. Also, there is no evidence that Wicken should have known that he could safely approach the burn site so soon after it was lit because of the risk of explosion or that he could not dump additional material on or adjacent to a fire that had subsided and crusted over. There is simply no evidence that Wicken had ever been told that these activities were unsafe due to the risk of explosion. Under the circumstances, the Administrative Law Judge concludes that the Respondent has

not established its asserted defens

J.L.L.